Achievement of Market-Friendly Initiatives and Results Program (AMIR 2.0 Program)

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Social Security Investment Commission
Information Technology (IT) Needs Analysis

Final Report

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Information Technology (IT) Needs Analysis

Social Securities Investment Commission

Chapter I. Social Securities Investment Commission

This chapter defines the Social Securities Investment Commission (SSIC) Information Technology (IT) needs. This IT Needs Analysis focuses on those functions and operations which are absolutely necessary for the SSIC to start their operations. The Analysis describes those elementary or basic SSIC needs from a functional and operational perspective. The functions are then translated into applications, equipment and system software configurations as required for the SSIC operations.

SSIC IT Objectives

The Social Securities Investment Commission's primary IT objectives are:

- To provide the SSIC with applications and computer systems so they are able to start, conduct and execute their business operations;
- To train the SSIC staff (technically and business wise) on all those applications and systems to ensure that the SSIC becomes self-supporting
- Creating secure and efficient platform and application environments;

General IT Requirements

The issues driving the Commission's IT requirements are:

- To make the Social Securities Operations in Jordan transparent, efficient and compliant with international standards;
- To ensure that the activities of the SSIC grow to meet its objectives;
- The necessity to develop the Commission's IT capabilities;
- The installation and support at the Commission of the relevant networks, computers and applications;
- The SSIC presently does not possess the IT resources required to support its activities.

The SSIC has asked the AMIR Program for technical and business assistance in meeting its objectives and in supporting its operations and future expansion. In IT terms, this Needs Assessment outlines the required network, computer software and hardware for the Commission to support its primary activities, to ensure that the Social Securities Operations are transparent, efficient and compliant with international standards.

Background

In early 2002, Ministry of Finance laws and directives mandated that the investment porfolio of the SSC come under the management of the newly formed SSIC. Hence, the current portfolio of the SSIC is valued at JD 1.6B. (~ US$ 2.2B). The SSIC has indicated that their operations will start on November 1, 2002 as by that day the funds for the Social Securities Commission (SSC) will be transferred and fall under the responsibility of the SSIC.

It is the aim of the SSIC to spread and re-allocate the US$ 2.2B assets gradually over the following instruments:

- Shareholding Companies
    - Public companies
    - Venture Capital
    - International Companies
- Bonds:
    - Government Bonds
    - Corporate Bonds
    - International Bonds
- Cash (Bank Accounts)
- Real Estate
- Loans

SSIC Application Requirements

Given the above list of assets and the requirements for some basic generic office systems, in IT terms the following application areas and support can be defined:

- Portfolio Management System
- Mortgage & Loan System with some basic Archiving and Workflow capabilities
- Accounting and General Ledger System
- Human Resources and Payroll
- Internet and E-Mail Support
- Basic General Office Support Functions
- Training and Support

This needs analysis defines the requirements for these applications as immediately needed for the SSIC to start their operations. Having the SSIC Office Automation outlined we have mapped the required functions on the organization to determine the hardware requirements for each of the departments and/or individual staff.

Note: As the SSIC Organization is still under development and not all staff has been assigned, this IT Needs Assessment has been prepared for the 2 stages of the organizational development:

> *1. Basic and Initial Organization set-up, key staff members to be assigned by November 1, 2002*
> *2. Further required functions of the organization assigned on an as-needed basis (fulfillment starting after January 2003)*

In the organization chart (diagram 1) below we have indicated these 2 stages of the organizational build-up of the SSIC. The arrow indicating the "Current Needs" (see grey colored functions) represents the organization the SSIC is presently setting up and which should be in place by November 1, 2002.
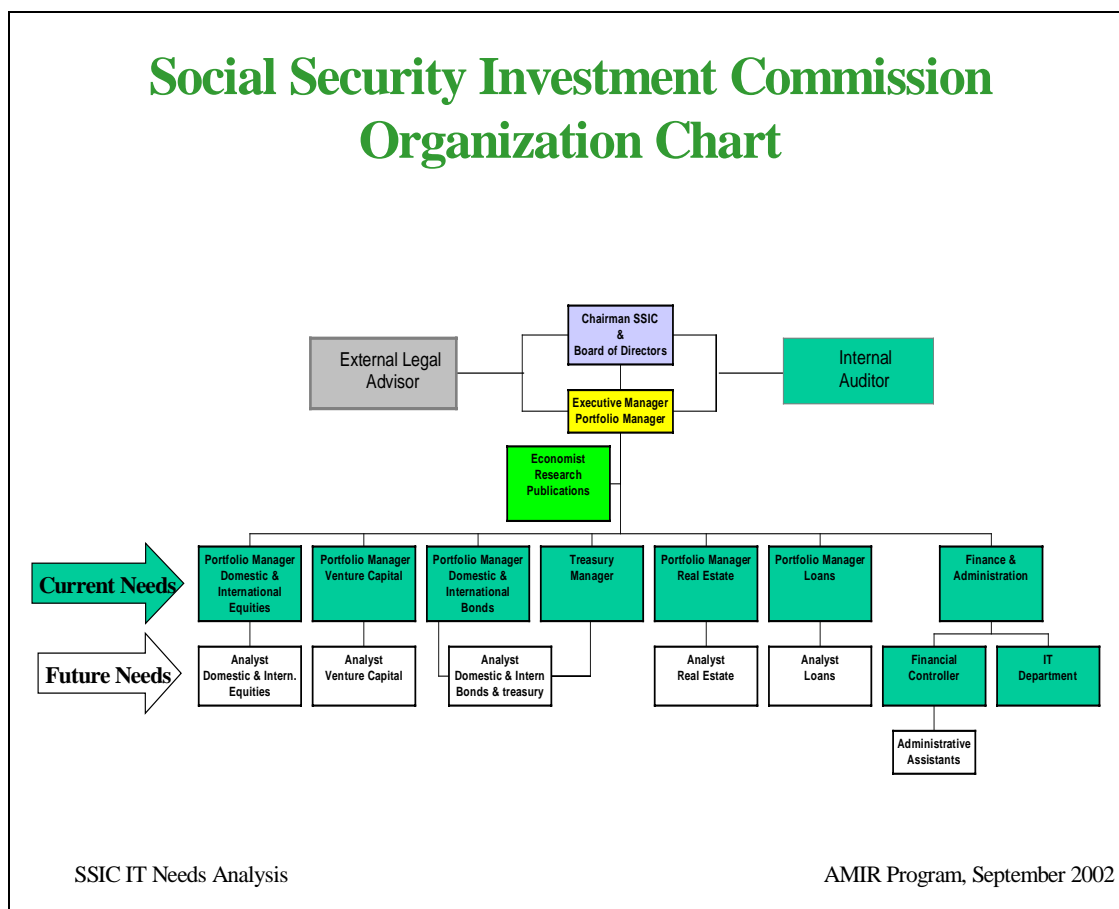

Diagram 1: Organization of the SSIC

The "Future Needs" on the organization chart indicates the staff, which could be assigned to the second stage of the SSIC organizational development. These recruitments for these functions, if absolutely needed, could start after January 2003.

Below is the assignment of workstations for these two stages of organizational development (see table 1).

Departments	Current Staff Needs	Future Staff Needs	Printer Color	B/W	Fax	Misc Copy	Scan
Board of Management / Chairman	1						
Executive Secretary	1		1		1		
External Legal Advisor							
Internal Auditor	1			1			
Economist & Public Relations	1			1			
Chief Executive Officer	1						
Executive Secretary	1		1		1	1	
Manager Domestic & International Equities	1			1			
Analyst Domestic & International Equities		1					
Manager Venture Capital	1			1			
Analyst Venture Capital		1					
Manager Domestic/Internat. Bonds	1			1			
Analyst Bonds & Treasury		1					
Treasury Manager	1						
Manager Real Estate	1			1			1
Analyst Loans		1					
Administration Department Manager	1						
HRM Department		1		1			
Administrative Support &Secretaries		1		1	1	1	
Financial Controller	1						
Financial Controller support staff		1		1			
IT Department	1	1					
Total	**14**	**8**	**2**	**9**	**3**	**2**	**1**

Table 1: Assignment of workstations

In this IT Needs Assessment we have focused on the first stage (*current needs*) of the SSIC organizational development. We envisage the noted equipment (*see Table 2*) to be adequate for the SSIC current needs as a Portfolio Management Entity. Further information on the detailed procurement specifications are embedded in the SSIC Project Implementation Plan "Notes".

Any further extension of the organization will have to be judged on the workload and activities required to be executed by the SSIC.

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Equipment and Application summary list:

The following table outlines the equipment (workstations, network, servers) and applications recommended.

Workstations	
	15 PCs with 19" monitor
	2 printers (b/w)
	Combined copier, scanner, fax & printer
Network Equipment	
	Switches (8 and 24 ports)
	Router and Firewall
	Cabling for Amra Hotel
Servers (rack-mount)	
	3 Intel- based servers
	rack UPS
	complete rack including console and cabling
Applications	
	Portfolio Management
	Loan & Mortgage
	G/L & Accounting, HRM & Payroll
	DHCP and file & print server applications

Table 2: Overview Equipment and Applications

SSIC Office Automation (OA)

Office Automation here has been defined as all systems, applications and functions required for the proper operations of the SSIC. In this Needs Analysis we have also put some emphasis on the security of all applications and supporting functions.

In order to increase the security at the SSIC, the separation of functions and applications is important. Any system and organization should have its important applications separated. This acts as a system of checks and balances to make sure that if any one area goes bad it cannot corrupt the whole. The value of separation is recognized in all industries. For reasons of security, we have divided the various applications and functions over various computer systems.

The main functions and applications the SSIC needs to execute for their proper functioning are:

1. **Applications**:
     i.   Portfolio Management
     ii. Mortgage & Loan System
     iii. General Ledger and Accounting
     iv. HRM and Payroll
     v.

2. **General Back Office Support functionality:**
   i. E-Mail and Internet enabling System
   ii. Operations Support Systems
   iii. Network and Security Management
3. **Networking (Local and Wide Area Network)**
   i. LAN Network
   ii. WAN Network
4. **Development, Testing and Training Environment**
5. **Training and Support**
6. **Computer Room and Disaster Recovery Facilities**

After outlining the main functions of each of the applications, recommendations were given to build the appropriate IT environments and infrastructure for these applications. At the same time recommendations have been made with regard to operations, maintainability, security and recovery.

1. Applications:

1.1. Portfolio Management System

The SSIC needs for its main operations a comprehensive Portfolio Management package. The Portfolio Management package should offer the following functions:

- Customizable to the SSIC needs
- Ease of Installation, Usage, Maintenance and Support
- Portfolio Management able to handle the SSIC required instruments like: Equities, Bonds, Real Estate, Bank Accounts, etc.
- Scalable, able to grow with the organization
- Future Expandability
- Extensive query possibilities
- Decision support tools
- Connectivity to market dissemination information providers like Bloomberg, Reuter, ASE, etc.
- Cash Flow Management and Income Statement capabilities
- Performance Tracking capabilities
- Interface to or embedded (integrated) Accounting capabilities
- Extensive reporting and possibilities for exporting reports in various formats (HTML, PDF, TXT, etc.)
- Graphics capabilities
- Multi-user/multi-tier environment,
- Data Warehousing capabilities
- Variety of input sources to feed the database
- English/Arabic enabled
- Association for Investment Management and Research (AIMR) compliant

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1.2. Mortgage & Loan System

The SSIC presently provides Mortgage, Loan and Project Funding. Furthermore it is the intension of the SSIC to further extend these Mortgage and Loan provisions to a broader public, taking on the role of a mortgage provider.

For the SSIC to better control and protect these investments a Mortgage & Loan package needs to be installed. The package should contain Loan Application (including various forms of mortgage calculations) as well as Loan Repayment module. The Loan Application should embed some basic Workflow capabilities.

Furthermore the Mortgage & Loan Application should be able to feed its data in to the Portfolio Management Package.

1.3. General Ledger and Accounting

If as described above the Portfolio Management package does not provide a comprehensive accounting module, a comprehensive General Ledger and Accounting system will have to be implemented at the SSIC. This software is also readily available at a reasonable cost in Jordan.

The General Ledger and Accounting system should contains the following modules:

- General Ledger
- Fixed Assets
- Accounts Payable
- Accounts Receivable
- Bank Book

The General Ledger system must provide a comprehensive and layered chart of accounts definitions. All other modules like accounts receivable, accounts payable, etc. must provide effective interfaces with the General Ledger module in order to avoid redundancy in data entry. The system should also provide posting of transactions that are independent of other modules. Furthermore the General Ledger system should provide the following features:

- User defined chart of accounts
- Allowing definitions of hierarchical / layered accounts (group, main, and sub-accounts)
- User defined divisions independent of the account codes
- Account balances and budget maintained for a combination of account codes, hereinafter referred to as Posting Account
- User friendly voucher posting that allows multiple entries in a single voucher, the voucher number serially generated by the system
- Voucher modification and deletion allowed until posting
- To ensure maximum control, unbalanced vouchers wherein debits and credits not match, cannot be recorded
- Audit trail information to be maintained for all transactions
- Extensive reporting capabilities
- Integration with the Portfolio Management Package.

1.4. HRM and Payroll system

A Human Resource Management application and Payroll system needs to be installed including a module for Savings Fund Management and Housing Loan. The package must fit local (Jordanian) conditions. There are a large number of software packages available in Jordan that could easily satisfy SSIC requirements.

The HRM System should provide the basic required information about the employee. Each employee must be given a code through which the relevant data are entered including personal, family, academic, previous experience, or other data about courses attended during service at the Commission. The class, department, division, grade and employee status data are also entered including data about the employee if he's on an unpaid leave, seconded, classified or working upon a contract. A photo of the employee can be entered as well.

The Payroll system should be comprehensive in order to fulfill the requirements of the Commission. The package should adhere to the Jordanian environment for payroll systems.

Note: Given the limited size of the organization we do recommend the SSIC to look into possibilities of outsourcing these HRM and Payroll functions to a third party in order to reduce resources and overhead.

2. General Back-Office functionality

The General Back Office Support functionality has been defined in this Needs Analysis as all those services, which are required and recommended for the proper and secure functioning of all applications and equipment on the WAN/LAN of the SSIC community. These mentioned support functions and applications have been divided into the following groups:

➢ Network and security environment
➢ E-Mail and Internet enabling functions
➢ Operations Support

2.1. Network and security environment

As a governmental organization it is our recommendation that the SSIC will at the appropriate time take part in the E-Government project for communication infrastructure and Internet services. The E-Government project in the start-up phase is primarily a communication infrastructure project, offering its users a secure network environment and providing services for e-mail, Internet access and inter government communication.

The network is providing an integrated set of services and administrative tools for creating, deploying, and managing PK-based (PK = Public Key) applications. This allows application developers to take advantage of the shared-secret security mechanisms or PK-based security mechanism, as appropriate. Enterprises also gain the advantage of being able to manage the environment and applications with consistent tools and policies.

However given the initial and recurring costs for the connection to the E-Government and size of the SSIC organization, we do recommend that the SSIC for the time being set up their own e-mail network and internet access in cooperation with an Internet Service Provider (ISP).

Note: The equipment and installation costs for the E-Government communication network are around US$ 60,000 (equipment and installation) while the recurring yearly cost are US$ 14,400 (JTC leased line costs). Any further costs to the National Information Center (NIC) to perform the required E-Government functions for connected government entities are unknown at this moment. Our proposal is that the SSIC should investigate and evaluate the possibility of co-sharing the E-Government link with the SSC.

Even if the SSIC would link their Internet and mail services to the E-government, the SSIC would require some additional network connections. The additional connections are needed for the required Market Information Dissemination Service providers like Bloomberg, Reuters, ASE (Amman Stock Exchange info), SDC (for the SSIC Portfolio), etc. Although some of the services here could be obtained via the Internet, the main sources of information, the ASE and SDC do not provide (at present) Internet based services.

The design for the SSIC (excluding the E-government connectivity possibility) includes a network security environment around a security zone. The security zone consists of a **Router, Firewall** (for connectivity (router) and identification and checking all incoming web and mail messages (firewall)) and **DHCP server** (an additional layer of internal network protection (Dynamic Host Configuration Protocol (DHCP)). The DHCP is an Internet protocol for automating the configuration of computers that are using TCP/IP. DHCP can be used to automatically assign IP addresses, to deliver TCP/IP stack configuration parameters and to provide other configuration information such as the addresses for printer, central time and news servers.

For the access control to the various applications, the SSIC will have to establish a well-defined scheme of authenticated users and passwords. Passwords should be dynamic and regularly updated. Various security schemes will have to be worked out to enhance systems security.

The following diagram outlines the design for the SSIC IT systems environment for the initial phase of the organization (key staff assigned by November 1, 2002, *current needs*).
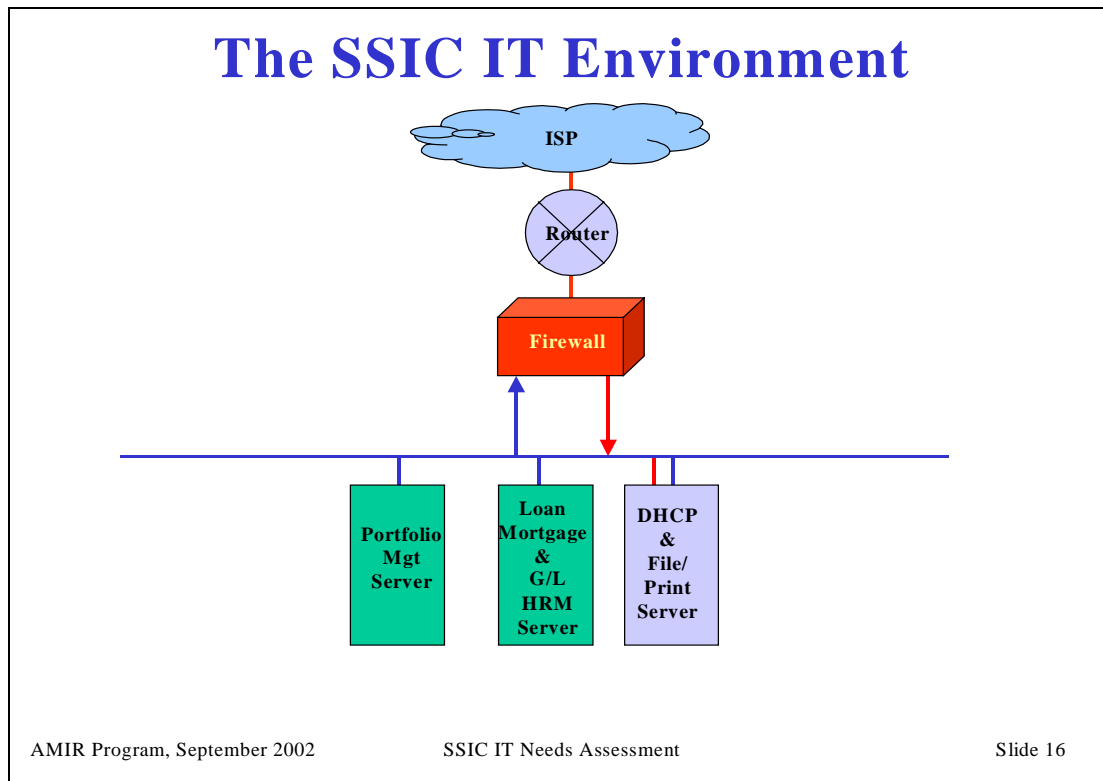
Figure 1: The SSIC Security and Application Environment

2.2. E-Mail and Internet enabling functions
As mentioned earlier, we do recommend the SSIC to set up (in the initial stage) their own Internet connection in cooperation with an ISP. In the initial phase, the SSIC needs primarily Internet and e-mail functions for their staff:

2.2.1. E-Mail Functions
All professional staff of the SSIC will be given an e-mail address and Internet access. E-mail will be used to communicate with the investment community. Required functionality should in this phase be obtained from an ISP.

2.2.2. Establishing SSIC Web site
The SSIC has to establish an Internet World Wide Web site to promote investment in Jordan and to advise the investment community of the workings of the commission and SSIC regulations. The site will be used to publish the SSIC rules and procedures. Various companies in Jordan will be able to help the SSIC in the design and deployment of their web site.

Note: No provisions have been taken in this Needs Assessment to build the recommended SSIC web site.

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In a later stage (E-Government connected), the web site will facilitate access to information through electronic databases for reports and legally required disclosure documents, and making the information more publicly available.

2.3. Operations support

Operations Support is defined as the support functions for the LAN connected PCs and high speed and line printers at the SSIC.

2.3.1.   File Server

A file server is a computer and storage device dedicated to storing files. Any user on the SSIC local area network can store files on this server. The File server also provides storage and computer capacity for backup, restore and shared-file facilities for the SSIC PCs on their local area network. Local PC files can be stored for backup and retrieval purposes. The file server will also store copies of all provided PC software for recovery and/or re-installation.

2.3.2.   Print Server

A print server is a computer that manages one or more printers. The Print server's main purpose is to provide print and spool management for the high-speed line printers connected to the local area network of the SSIC.

3.   Networking (LAN and WAN)

At present the SSIC did not yet select their office premises. However from the discussions we understood that that the SSIC will shortly do so.

Note: In this Needs Assessment we did not take into consideration any telephone communication infrastructure for the SSIC premises.

3.1. Local Area Network

In the new premises, the basic infrastructure for a Local Area Network will have to be laid down. As soon as a floor plan of the new premises will be available the AMIR Program will assist the SSIC in the preparation of the LAN infrastructure plan.

A Local Area Network will have to be designed for the new premises. The required switching equipment for the infrastructure of the LAN Network needs to be able to handle at least 24 connections for the workstations of the SSIC staff and additional connections to servers. A 24-port switch (preferred CISCO) has been specified for the basic LAN infrastructure.

Note: We have based further budget, delivery & installation information and specifications on basis of this 24-port switch.

3.2. Wide Area Network

In order to connect the SSIC to the outside world, SSIC needs the following WAN connections:

- Connection to an ISP for Internet and mail services. Connection given the number of SSIC staff will be 256KBps
- Connection to market information data vendors (leased lines)
    a. ASE (Market Information Dissemination)
    b. SDC (SSIC Portfolio)
    c. Bloomberg
    d. Reuters
    e. Etc.

A router with the options for making the required connections will have to be procured. For security purposes all traffic from the router into the SSIC environment will be directed to a Firewall (CISCO Pix Firewall). The purpose of the firewall is to protect the SSIC from intruders and hackers into their IT Environment.

Note: We have based further budget, delivery & installation information and specifications on basis of the mentioned Router and Firewall.

4. Development, Test and Training Environment
Currently this IT Need Analysis does not recommend the implementation of a new development testing and systems environment. However, in the future, the SSIC may require more extensive development testing and systems and training.

5. Training and Support
The Commission needs to train its entire staff to become computer, application and Internet literate. The AMIR Program is able to provide the required (computer) training for the SSIC staff.

For the application packages like Portfolio Management, General Ledger, Human Resource Management, Mortgage & Loan System, etc. procurements will include documentation (technical and user) and user and operations training.

We have based further budget, delivery & installation information and specifications for training and support on the preliminary information received from suppliers.

The following table shows the initial (computer) training plan we propose for the SSIC staff.

SSIC Staff IT Training	Courses	# Staff	# hours	Remarks
Microsoft Product Training	MS Word	20	6	all staff
	MS Excel	20	6	all staff
	MS PowerPoint	20	6	all staff
	MS Explorer/Outlook	20	3	all staff
	MS Project	1	6	IT department
	MS Front Page	1	24	IT department
	Office Procedures/Tools	1	80	IT department
	MCSE training IT staff	2	160	IT department
Portfolio Management	Business Training	5	80	Portfolio Mgt Department
	Technical Training	1	80	IT department
General Ledger and Accounting	Business Training	3	16	Finance Department
	Technical Training	1	16	IT department
Human Resources and Payroll	Business Training	1	16	Finance Department
	Technical Training	1	16	IT department
Mortgage & Loan Package	Business Training	1	24	Real Estate Department
	Technical Training	1	24	IT department
CISCO Training	Firewall	1	24	IT department
	Router	1	24	IT department
	Security	1	24	IT department

Table 3: Proposed SSIC IT Training Plan

6. Computer Room and Disaster Recovery Facilities

As the SSIC will be in control of an estimated asset of US$ 2.24B, we recommend that the SSIC establish a dedicated and protected area (room) to house this equipment. The computer room needs to be equipped with the following features:

- Protective Entry and Access Control
- Fire prevention (FM200 installation)
- Raised floors
- Air-conditioning
- Uninterrupted Power Supply (UPS), see note below

Note: We have specified all equipment to be rack-mounted. The rack, housing the servers and networking equipment, should have an Uninterrupted Power Supply (UPS) built in. According to our recent specifications all equipment can be housed in a single rack.

The recommended features such as Entry and Access Control, Fire Prevention, Raised floor and Air-conditioning, etc. to protect the computer area will have to be established by the SSIC.

6.1. Disaster Recovery Facility

As soon as all the equipment, applications and installations have been performed, the SSIC will have to establish a disaster recovery site for some of their most important systems; i.e. Portfolio Management, Mortgage & Loan System, etc.

For the immediate future and not having the disaster recovery site established, the SSIC does need to take regular (daily, weekly and monthly) backups of their systems and store those backups locally and in an off-site location.

6.2. Housing the equipment

In order to efficiently house the equipment, the AMIR Program proposes that all the equipment be rack-mountable in order to save on floor space. Housing the equipment in racks will also allow the SSIC to orderly cable all equipment.
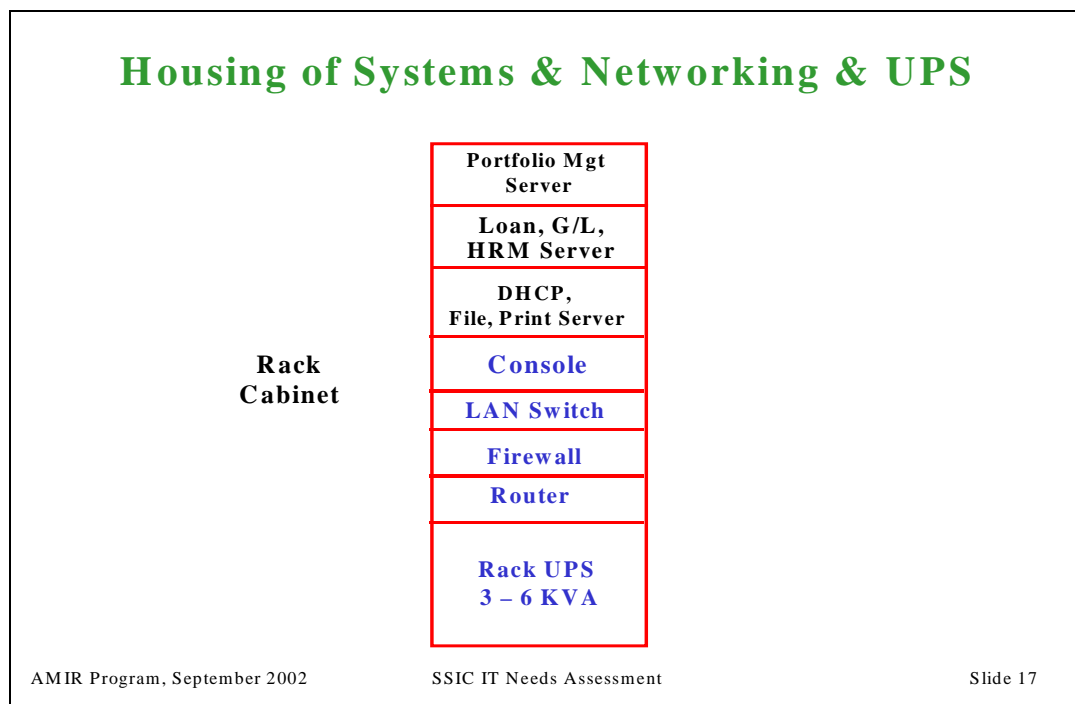

Figure 2: Equipment and UPS housing

Given the expected load (number of workstations connected and operational) on the application systems (servers), the following allocations of applications to the servers have been made:

- One (1) server for Portfolio Management
- One (1) server for Loan & Mortgage plus the administrative applications (G/L & Accounting and HRM & Payroll)
- One (1) additional server will be installed for security and other general back-office applications (file and print server).

Summary

As noted previously, it would be very difficult and disruptive to attempt to implement all of the needed functions applications at the same time. We will therefore divide the related procurements into a set of smaller projects and will schedule the acquisition of these systems according to SSIC priorities and SSIC's staff availability.

Implementation Schedule

It would be very difficult to attempt to implement all of these projects at the same time. We have therefore divided the required procurements and installations into a number of priorities (labeled Priority 1, 2 and 3). In Appendix A to this document we have attached an implementation plan taken into consideration the lead-time for procurements of the required equipment. We have grouped the items in this Needs Analysis into the following priorities.

Priority 1.

Acquisition and Installation of the LAN, the workstations, printers and the portfolio server. Having this equipment installed the implementation, installation and training of the Portfolio Management system will take place. According the proposal received (from Advent, our benchmark) this will take at least 4 weeks.

Priority 2.

In this phase and after the completion of phase 1, the Loan system will be implemented. Besides the installation of the Loan server, installation, and training of the Loan package will be executed.

We do propose that in this phase also the SSIC WAN Network (including the security) will be established in order to be able to have Internet access for the SSIC community but also to be able to gather information from the Market Dissemination Service providers.

Priority 3.

The General Ledger & Accounting and Human Resource & Payroll application will be implemented. The applications will be installed on the same server as the Loan application. Installation and training on this package will be provided during this phase.

After having installed the 3 main applications, the connectivity and exchange of data between these 3 applications will be established.

In the attachment A (SSIC Implementation Plan) we have outlined the SSIC plan for the above-mentioned 3 priorities.

SSIC Workstations

AMIR advises the SSIC to standardize all their workstations on Windows 2000 and Microsoft Office Professional. The workstations to be acquired for the SSIC will have to be Arabic and English enabled and be equipped with the Arabic enabled version of MS Office (Office 2000 Professional). Microsoft modules to be installed on each workstation: MS Word, Excel, PowerPoint, Internet Explorer, Outlook, Windows Explorer, Access, etc.

Server Hardware

In the attachment A (Implementation Plan) all hardware and software specifications are defined. This hardware list as embedded in the plan (see Notes in the Implementation Plan), covers all of SSIC's basic IT needs to start their operations.

All system we will acquire have to be "Open" systems architecture. The Microsoft Windows 2000 Operating System is preferred for the servers.

Final Remark to this IT Needs Assessment:

IT requirements for Application procurement:

During the preparation of this IT Needs Assessment, the AMIR Program has executed preliminary investigations into suitable application packages for the SSIC. It became clear that for the 3 main applications (Portfolio Management, Loan & Mortgage and G/L and Accounting) various packages complied with the SSIC requirements.

The additional IT criteria we have laid down for those packages were the following:
1. Applications should run under Windows 2000 (server and workstations) environment in order to standardize on the systems and thus limiting the resources required for the maintenance and support.
2. Ease of implementation and support; preferred local support. If no local support is available, on-line (internet) support should be possible.
3. The requested support should be offered for office hours, this given the time zone Jordan is in.
4. Requirements for on-site installation and training.